

REMARKS

The Office Action mailed August 4, 2005, has been received and reviewed. Claims 1 through 45 are currently pending in the application, of which claims 1 through 39 are currently under examination. Claims 40 through 45 are withdrawn from consideration as being drawn to a non-elected invention, and have been canceled without prejudice or disclaimer to the filing of one or more divisional applications. Applicants herein acknowledge the restriction requirement in the above-referenced application, and affirm the election to prosecute the claims of Group I, claims 1 through 39, without further traverse.

Claims 1 through 17, 19 through 37 and 39 stand rejected. Claims 18 and 38 have been objected to as being dependent upon rejected base claims, but the indication of allowable subject matter in such claims is noted with appreciation. New claim 46 represent dependent claim 38 rewritten in independent form (and dependent claims 47-59 correspond to claims 22-33 and 39). Claims 1 and 15 have been amended herein. Claims 14, 18 and 38 are canceled. No new matter was added. Reconsideration is respectfully requested.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,977,641 to Takahashi et al. in view of U.S. Patent No. 6,849,524 to Shelton et al.

Claims 1, 2, 8, 19 through 22, 28 and 39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. (U.S. Patent No. 5,977,641) in view of Shelton et al. (U.S. Patent No. 6,849,524). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on

applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The Examiner indicated that dependent claim 18 was allowable in view of the cited art if rewritten in independent form. Applicants have amended claim 1 to include the limitations of claim 18 and intervening claim 14 and respectfully submit that claims 1, 2, 8, 19 and 20 of the presently claimed invention are allowable.

Claim 21 of the presently claimed invention recites a method of forming chip-scale packages, comprising: providing a semiconductor wafer having an active surface with a plurality of semiconductor die locations separated by at least one street of semiconductor material; forming a first protective coating on the semiconductor wafer to cover the active surface; cutting at least one channel in a passive surface of the semiconductor wafer along the at least one street of semiconductor material to expose a plurality of semiconductor die side surfaces; etching the plurality of semiconductor die side surfaces to remove a layer of semiconductor material containing cutting-induced defects and to expose the first protective coating within the at least one channel; forming a second protective coating on the semiconductor wafer to cover the passive surface and fill the at least one channel; and separating the semiconductor wafer along the at least one channel to form a plurality of individual chip-scale packages.

Applicants respectfully submit that the proposed combination of references fail to teach or suggest every element of the presently claimed invention. Specifically, Takahashi and Shelton fail to teach or suggest "cutting at least one channel in a passive surface of the semiconductor wafer along the at least one street of semiconductor material to expose a plurality of semiconductor die side surfaces" or "etching the plurality of semiconductor die side surfaces to remove a layer of semiconductor material containing cutting-induced defects and to expose the first protective coating within the at least one channel" or "forming a second protective coating on the semiconductor wafer to cover the passive surface and fill the at least one channel" as recited in claim 21 of the presently claimed invention.

Takahashi fails to teach or suggest cutting at least one channel in a *passive* surface of a semiconductor wafer. Instead, Takahashi discloses forming channels on an active surface of a semiconductor wafer. While Shelton discloses a double cut approach to separating wafers (FIG.

7), Shelton fails to teach or suggest “etching the plurality of semiconductor die side surfaces to remove a layer of semiconductor material containing cutting-induced defects and to expose the first protective coating within the at least one channel” or “forming a second protective coating on the semiconductor wafer to cover the passive surface and fill the at least one channel” as recited in claim 21 of the presently claimed invention. Instead, Shelton discloses applying a protective coating only to the side of the wafer to be cut. (Col. 1, line 62- col. 2, line 13). While Shelton discloses cleaning the wafer with a wet etch, it fails to teach or suggest “etching the plurality of semiconductor die side surfaces to remove a layer of semiconductor material containing cutting-induced defects *and to expose the first protective coating within the at least one channel.*” Further, Shelton fails to teach or suggest “forming a second protective coating on the semiconductor wafer to cover the passive surface and fill the at least one channel.” Instead, Shelton only discloses forming a protective coating prior to cutting the wafer.

As the proposed combination of references fail to teach or suggest every element of the presently claimed invention, claim 21 is not rendered obvious by Takahashi and Shelton. Accordingly, claim 21 of the presently claimed invention is allowable.

Claims 22, 28 and 39 are each allowable as depending from allowable claim 21.

Obviousness Rejection Based on U.S. Patent No. 5,977,641 to Takahashi et al. in view of U.S. Patent No. 6,849,524 to Shelton et al. as applied to claims 1 above, and further in view of U.S. Patent No. 6,399,178 to Chung

Claims 3 through 5, 9 through 11, 23 through 25, and 29 through 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. (U.S. Patent No. 5,977,641) in view of Shelton et al. (U.S. Patent No. 6,849,524) as applied to claims 1 above, and further in view of Chung (U.S. Patent No. 6,399,178). Applicants respectfully traverse this rejection, as hereinafter set forth.

The Court of Appeals for the Federal Circuit has stated that “dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious.” In re Fine, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). See also MPEP § 2143.03. Having failed to teach or suggest each and every limitation of the current application, the prior art

referenced as rendering dependent claims 3 through 5, 9 through 11, 23 through 25, and 29 through 31 obvious, cannot serve as a basis for rejection.

Obviousness Rejection Based on U.S. Patent No. 5,977,641 to Takahashi et al. in view of U.S. Patent No. 6,849,524 to Shelton et al. in further in view of U.S. Patent No. 6,399,178 to Chung as applied to claims 1, 3, 9, 21, 23 and 29 above, and further in view of U.S. Patent No. 6,885,108 to Luo et al.

Claims 6, 7, 12, 13, 26, 27, 32 and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. (U.S. Patent No. 5,977,641) in view of Shelton et al. (U.S. Patent No. 6,849,524) in further in view of Chung (U.S. Patent No. 6,399,178) as applied to claims 1, 3, 9, 21, 23 and 29 above, and further in view of Luo et al. (U.S. Patent No. 6,885,108). Applicants respectfully traverse this rejection, as hereinafter set forth.

The Court of Appeals for the Federal Circuit has stated that “dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious.” In re Fine, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). See also MPEP § 2143.03. Having failed to teach or suggest each and every limitation of the current application, the prior art referenced as rendering dependent claims 6, 7, 12, 13, 26, 27, 32 and 33 obvious, cannot serve as a basis for rejection.

Further, Applicants respectfully submit that the Luo reference is disqualified as prior art against the claimed invention because the subject matter and the claimed invention “were, at the time the invention was made, owned by the same person or subject to an assignment to the same person.” See, MPEP §706.02(I)(1); 35 U.S.C. §103(a). In the Statement of Common Ownership filed herewith, it is submitted that U.S. Patent No. 6,885,108 to Luo and the present application were, at the time the invention was made, owner by, or subject to an obligation of assignment to the same entity, namely Micron Technology, Inc. Applicants respectfully submit that such a statement is sufficient evidence to establish common ownership and to disqualify U.S. Patent No. 6,885,108 to Luo from being used as prior art against the claims of the above-entitled application. MPEP § 1706.02(I)(2)II.

The Examiner acknowledges that the combination of Takahasi, Shelton and Chung fails to teach or suggest all of the element of claims 6, 7, 12, 13, 26, 27, 32 and 33. (See Office Action mailed August 4, 2005, pages 7-8). In view of Luo's disqualification as prior art, Applicants respectfully submit that claims 6, 7, 12, 13, 26, 27, 32 and 33 are not rendered obvious by the proposed combination and are, thus, allowable.

Obviousness Rejection Based on U.S. Patent No. 5,977,641 to Takahashi et al. in view of U.S. Patent No. 6,849,524 to Shelton et al. as applied to claim 1 above, and further in view of U.S. Patent No. 6,353,267 to Ohuchi et al.

Claims 14 through 16, and 34 through 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. (U.S. Patent No. 5,977,641) in view of Shelton et al. (U.S. Patent No. 6,849,524) as applied to claim 1 above, and further in view of Ohuchi et al. (U.S. Patent No. 6,353,267). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 14 has been canceled. The Court of Appeals for the Federal Circuit has stated that "dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious." In re Fine, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). See also MPEP § 2143.03. Having failed to teach or suggest each and every limitation of the current application, the prior art referenced as rendering dependent claims 15, 16 and 34-37 obvious, cannot serve as a basis for rejection.

Obviousness Rejection Based on U.S. Patent No. 5,977,641 to Takahashi et al. in view of U.S. Patent No. 6,849,524 to Shelton et al. further in view of U.S. Patent No. 6,353,267 to Ohuchi et al. as applied to claims 1 and 14 above, and further in view of U.S. Patent No. 6,620,731 to Farnworth et al.

Claims 17 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. (U.S. Patent No. 5,977,641) in view of Shelton et al. (U.S. Patent No. 6,849,524) further in view of Ohuchi et al. (U.S. Patent No. 6,353,267) as applied to claims 1 and 14 above,

and further in view of Farnworth et al. (U.S. Patent No. 6,620,731). Applicants respectfully traverse this rejection, as hereinafter set forth.

The Court of Appeals for the Federal Circuit has stated that "dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious." In re Fine, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). See also MPEP § 2143.03. Having failed to teach or suggest each and every limitation of the current application, the prior art referenced as rendering dependent claims 17 and 37 obvious, cannot serve as a basis for rejection.

Objections to Claims 18 and 38/Allowable Subject Matter

Claims 18 and 38 stand objected to as being dependent upon rejected base claims, but are indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. Applicants have amended claim 1 to include the limitations of claim 18 and respectfully submit claim 1 is in condition for allowance. New claims 46-59 represent claim 38 rewritten in independent form and dependent claims 22-33 and 39. Applicants respectfully submit new claims 46-59 are in condition for allowance.

ENTRY OF AMENDMENTS

The amendments to the claims above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1-13, 15-17, 19-37, 39 and 46-59 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



Krista Weber Powell
Registration No. 47,867
Attorney for Applicants
TRASKBRITT
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

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